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A UNIFORM PROFIT POLICY
FOR GOVERNMENT ACQUISITION (II)

November 1979

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EXECUTIVE SUMMARY

In December 1978, the Logistics Management Institute (LMI) proposed a government-wide policy for establishing profit objectives for use in contract negotiation.¹ By stipulation of the study sponsor, the Office of Federal Procurement Policy (OFPP), LMI deliberately divorced itself from current and past approaches, policies and practices, assumed that anything in the acquisition process could be changed, and disregarded problems of making the transition to a new policy.

LMI recommended a policy based upon the following principles:

- Relate target rates to current profit rates found in the economy at large.
- Update target rates annually to reflect current economy-wide experience.
- For service contracts, base profit on cost only, since a contractor's use of capital on such contracts generally does not materially reduce cost to the government.
- For manufacturing and construction contracts,
 - Base profit on capital as well as cost, since a contractor's use of capital generally can reduce cost to the government.
 - Place heavy weight on the capital component to encourage the use of capital.
 - Recognize both operating and facilities capital, since both have costs and can affect contract cost.
- Adjust target rates for contract type risk and complexity.

OFPP called for public comment on LMI's December 1978 report, and subsequently asked LMI to continue its study effort in the light of that comment. The comment focused almost entirely on the data employed, the profit levels

¹Robert K. Wood, Myron G. Myers, M. Brian McDonald, A Uniform Profit Policy for Government Acquisition, Logistics Management Institute, Washington, D.C., December 1978.

produced by the example formulas, and the departure from certain government rules and practices. Responding in this report, LMI updates the data used to compute the coefficients in its formulas, revises its proposed policy in the light of current government practices and existing policies that cannot, for the present, be changed, and addresses the comment on its earlier report.

The coefficients in the formulas have been recomputed using the most recent available data, introducing a more direct and complete target rate calculation, allowing for current practice and experience, and reflecting the comment received. More negotiating flexibility has been introduced into the formulas.

The new formulas reflect an updated average rate of earnings before interest and taxes, from the economy at large, of 22.4 percent on capital employed for manufacturing and construction contracts and 7.2 percent on costs for service contracts.

The new formulas are designed to produce negotiated ("going-in") profit objectives which allow for:

- the level of profit necessary to attract the most efficient contractors, who earn profits in excess of the sector-wide averages for reasons beyond those incorporated in the formulas;
- the difference, for whatever reason, between the profit level negotiated and that actually realized by a contractor, since the formulas set going-in or target profits while commercial experience reflects realized or attained profits;
- the continuation of current cost principles and the inclusion in profit of those normal expenses of doing business (e.g., charitable contributions, advertising) which the government is unwilling to compensate as contract costs;
- overall results essentially comparable to current profit experience on government contracts;
- redistribution of profits in favor of contractors employing relatively high amounts of capital.

Allowance for these factors leads to target rates one-third above the average rate realized in the economy at large: 29.9 percent on capital for manufacturing and construction contracts and 9.6 percent on cost for service contracts. The contract profit resulting from use of the formulas based on those target rates will in practice be reduced by the contractor's payment of interest and taxes and by the causes of the differences between negotiated and realized profit. The profit formula for manufacturing and construction contracts is summarized below:²

$$\begin{aligned}
 & 9.0\% \text{ on Operating Capital} + 26.3\% \text{ on Facilities Capital} \\
 & \quad + 4.6\% \text{ on Estimated Contract Cost} \\
 + & \left\{ \begin{array}{ll} -2\% & \text{on Cost if Cost-Plus-Fixed Fee} \\ -1\% \text{ to } +1\% & \text{on Cost if Cost-Plus-Incentive Fee} \\ +1\% \text{ to } +3\% & \text{on Cost if Fixed-Price-Incentive} \\ +3\% & \text{on Cost if Firm-Fixed-Price} \end{array} \right. \\
 & + 0\% \text{ to } 3\% \text{ on Cost for Complexity.}
 \end{aligned}$$

The profit formula for service contracts is summarized below:

$$\begin{aligned}
 & 9.6\% \text{ on Estimated Contract Cost} \\
 + & \left\{ \begin{array}{ll} -2\% & \text{on Cost if Cost-Plus-Fixed Fee} \\ -1\% \text{ to } +1\% & \text{on Cost if Cost-Plus-Incentive Fee} \\ +1\% \text{ to } +3\% & \text{on Cost if Fixed-Price-Incentive} \\ +3\% & \text{on Cost if Firm-Fixed-Price} \end{array} \right. \\
 & + 0\% \text{ to } 3\% \text{ on Cost for Complexity.}
 \end{aligned}$$

²Application of this formula would require a reduction in profit by an amount equivalent to Cost Accounting Standard 414 cost of money, if applicable and paid.

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I. INTRODUCTION

In December 1978, the Logistics Management Institute (LMI) proposed a government-wide policy for establishing profit objectives for use in contract negotiation.¹ By stipulation of the study sponsor, the Office of Federal Procurement Policy (OFPP), LMI deliberately divorced itself from current and past approaches, policies and practices, and assumed that anything in the acquisition process could be changed, and disregarded problems of making the transition to a new policy. These assumptions included the following:

- Cost accounting standards could be changed.
- Differences between negotiated and realized profit rates due to buy-ins, poor cost estimating, incorrect selection of contract type, and underfunding of early program phases could be addressed and solved directly.
- The investment risk that a contractor faces - when, for example, he has an annual contract in hand and is considering investing in cost-reducing equipment with a long-term economic life - could be addressed and solved directly through positive inducements, such as accelerated depreciation, expensing of equipment, termination protection, and sharing of cost savings. For a profit policy to allow the contractor to recover his investment with profit over the contract, it would have to offer some multiple of commercial profit rates to every contractor or involve the government contracting officer in a company's capital investment decisionmaking process.

LMI recommended a policy based upon the following principles:

- Relate target rates to current profit rates found in the economy at large. Use Federal Trade Commission data to determine current profit rates for manufacturing and construction contracts and Internal Revenue Service data for service contracts.
- Update target rates annually to reflect current economy-wide experience.

¹Robert K. Wood, Myron G. Myers, M. Brian McDonald, A Uniform Profit Policy for Government Acquisition, Logistics Management Institute, Washington, D.C., December 1978. Prepared for the Office of Federal Procurement Policy.

- For service contracts, base profit on cost only, since a contractor's use of capital on such contracts generally does not materially reduce cost to the government.
- For manufacturing and construction contracts,
 - Base profit on capital as well as cost, since a contractor's use of capital generally can reduce cost to the government.
 - Place heavy weight on the capital component in determining the profit objective to encourage the use of capital. With a policy heavily weighted on cost, a capital investment that reduces cost leads to reduced profits.
 - Recognize both operating and facilities capital. Both have a cost to contractors which is intended to be covered in profit. The amount of operating capital on a contract is approximated based upon results of the Air Force Contract Finance Model. The amount of facilities capital is allocated to a contract using Cost Accounting Standard (CAS) 414 procedures.
- Adjust target rates for contract type risk and complexity. The first adjustment is for the risk of not recouping all costs associated with different types of contracts. The second is for the additional entrepreneurial skill required to organize and manage complex tasks.

The principles embodied in LMI's policy are in line with the evolution of preceding policies:

- from the judgmental consideration of nine factors, such as nature of the work, risk, investment, etc., in determining profit within statutory limits expressed in terms of percent of cost (before 1963);
- to weighted guidelines, where profits are determined as a percent of cost within ranges for different cost elements (after 1963); recognition of capital in profit determination was considered but abandoned since it could not be measured easily at the time;
- to attempts to recognize and measure facilities and operating capital on a contract and consider them in determining profit objectives as part of Defense Procurement Circular (DPC) 107 (1971);
- to recognition of facilities capital partly as an allowable cost in CAS 414 and partly as profit in DPC 76-3 (1976);
- to LMI's recommended policy, which recognizes both facilities and operating capital in determining profit, increases the consideration of capital in determining profit and relates overall target rates to economy-wide results.

OFPP called for public comment on LMI's December 1978 report, and subsequently asked LMI to continue its study effort in the light of that comment.

The comment focused almost entirely on the data employed, the profit levels produced by the example formulas, and the departure from certain government rules and practices.

Responding in this report, LMI updates the data used to compute the coefficients in its formulas, revises its proposed policy in the light of current government practices and existing policies that cannot, for the present, be changed, and addresses the comment on its earlier report.

In applying the principles embodied in LMI's policy, a profit formula based on both capital and cost is used for manufacturing and construction contracts; a formula based on cost alone is used for service contracts. Coefficients in the formulas are calculated to produce target rates that are related to profit rates found in the economy at large. In addition, for the profit formula based on both capital and cost, coefficients are also derived based upon the values of other variables found in the economy at large.

In Chapter II, RATE SETTING, LMI sets the stage for producing the formulas by updating the profit rates and other variables found in the economy at large, choosing target rates related to those profit rates and selecting adjustments for both contract type risk and complexity. It uses those values from Chapter II in presenting the new and alternate profit formulas in Chapter III, PROFIT FORMULAS.

II. RATE SETTING

UPDATE DATA

In this section we discuss the updating of the average profit rates from the Federal Trade Commission (FTC) and Internal Revenue Service (IRS) data for manufacturing and construction industries and for service industries, respectively. Profit rates are measured in terms of earnings before interest and taxes (EBIT) relative to capital employed on the task for manufacturing and construction contracts, and relative to cost (excluding interest) for service contracts. Alternate methods suggested in the original report for deriving the FTC average rate are also discussed.

Federal Trade Commission

Original Findings and Recommendations. LMI's original analysis of manufacturing industry profitability concluded: 1) there was no significant upward or downward trend in profitability over the 15-year period, 1962 to 1976, as measured by EBIT to all debt plus equity; 2) industries with greater amounts of facilities capital, as compared to operating capital, earned higher rates of profit; 3) after considering asset composition (the ratio of facilities to total capital) and capacity utilization, there were few differences in profitability among industries.

The consequences of these findings were: 1) a long-term historic average profitability for all manufacturing could be used as the basis for developing the government profit target rate; 2) the profit formula should result in higher profits for contracts using more facilities than operating capital; and 3) a single profit formula incorporating important explanatory variables could be developed for manufacturing and construction contracts.

LMI also recommended in its original report (as quoted below) the following actions be undertaken prior to implementation of its profit formulas:

- As annual updates of industry profitability data become available, target rates used in cost-based and hybrid profit structures must be examined and updated to reflect current conditions in the marketplace.
- The most recent year's FTC data on all manufacturing industries should be incorporated into the most recent 15-year average data. If a trend in return on capital appears with the most recent 15-year data, then greater weight should be attached to the most recent years.
- For future rate setting, when data from before 1974 can be dropped without a substantial loss of historic perspective, income from nonconsolidated sources should be included as well.
- The more direct approach to calculating a target rate by using the ratio of operating earnings before (prorated) interest and taxes to operating assets should be applied and its results considered.

We conformed to all of these recommended actions in determining the updated average profit rate.

Results of Profit Rate Updating. Prior to 1974, the FTC included only a single source of income in its Quarterly Financial Report: income from operations. The FTC did not report nonoperating income and nonoperating expenses (primarily interest) separately but instead gave the net of these two items. Furthermore, companies were not supposed to report income from foreign branches and nonconsolidated entities, although the FTC was aware that some companies did include this income in their report to the FTC. To compile a compatible 15-year data series, we included in our original report only operating earnings and interest (which had to be estimated for years prior to 1974) as our measure of EBIT.

LMI has incorporated the most recent FTC data for calendar years 1977 and 1978.¹ Beginning in the fourth quarter of 1973, the FTC provided three separate sources of income: operating income, nonoperating income, and income from foreign branches and nonconsolidated sources. This visibility allows us to compute profit based on each source or in combination, e.g., all sources of income to all debt and equity, and operating income to operating (contract) assets for 1974 to 1978. Table II-1 displays these results, using the broader and more correct measure of EBIT to compare with debt plus equity.

The increased profit rates measured as EBIT to debt plus equity for the period 1974 to 1976 presented in Table II-1 amount to 4.9 percentage points above the rates originally reported. The inclusion of nonoperating income, and income from nonconsolidated foreign branches and entities and investments accounts for 2.2 and 1.2 percentage points respectively out of the 4.9 point difference. The remainder, about 1.5 percentage points, represents an upward trend in the economy at-large due to inflation and other factors. Profit rates were comparable or higher in 1977 and 1978.

As recommended in the original report, the superior quality of post-1973 data argues for dropping the 15-year average in favor of the post-1973 period: after 1973, three separate sources of income are reported, as are nonoperating expenses (primarily interest). Even after considering the use of different accounting definitions, the remaining upward trend in profit rates is an additional reason to use the five years of data after 1973. While a period of five years generally is not long enough to reflect business cycles, it is nevertheless preferable to the FTC data before 1974. Furthermore, with continuing inflation, even more contemporaneous data may have to be used in the future to reflect current market conditions.

¹Quarterly Financial Report, Federal Trade Commission, Washington, D.C., various years.

TABLE II-1. FTC MANUFACTURING SECTOR PROFITABILITY AND FINANCIAL CHARACTERISTICS: 1974-1978

	1974	1975	1976	1977	1978	Average
<u>EBIT Total</u> All Debt Plus Equity	22.9%	19.4%	22.1%	22.5%	24.3%	22.3%
<u>EBIT From Contract Assets</u> Contract Assets	22.4%	19.6%	22.8%	23.1%	24.1%	22.4%
Turnover Rate: <u>Costs Exclusive of Interest</u> Contract Assets	2.29	2.15	2.30	2.33	2.37	2.29
Asset Composition: <u>Net Plant</u> Contract Assets	56.9%	58.4%	60.4%	60.8%	61.4%	59.6%

EBIT Total = pretax operating income, plus nonoperating income, plus income from foreign branches and equity earnings of domestic and foreign nonconsolidated entities and investments accounted for by the equity method, plus nonoperating expenses (interest, etc.).

EBIT From Contract Assets = pretax operating income, plus prorated nonoperating expenses (interest) where interest is allocated based on the ratio of contract assets to all debt plus equity.

Contract Assets (= Total Capital Provided) = receivables, plus net inventories, plus net plant and equipment, minus advances, minus payables, minus accruals.

Operating earnings before taxes plus prorata interest relative to contract assets were also computed--a 1974 to 1978 average profit rate of 22.4 percent. Table II-1 confirms our original conclusion that these alternative measures produce nearly identical results.

The impact of inflation since 1973-1974 is evident in the turnover rate, i.e., the ratio of costs, exclusive of interest, to contract assets (total capital provided). The turnover rate has increased because dollar costs rise with inflation, while net facilities and land lag because they are in part recorded at preinflation historic costs. The turnover rate (annual

average from 1974 to 1978) increased to 2.29 compared to the 1962-1976 average of 1.65 used in the original hybrid profit formula derivation.

The behavior of the asset composition ratio for the entire FTC manufacturing sector also reflects the impact of inflation on the more recent data. Operating capital (e.g., inventories and receivables) expands with inflation more rapidly than total assets, since the latter includes net plant and equipment at historic costs. Consequently, the ratio of net plant to total assets has declined from an average of 62.5 percent from 1962 to 1976 to about 60 percent for 1974 to 1978.

Internal Revenue Service

We updated the IRS average rate of EBIT to cost (excluding interest) for service industries to include 1974, the most recent year available²:

$$\frac{\text{EBIT}}{\text{Cost} - \text{Interest}}$$
$$= \frac{\text{Net Income (- Deficit) Before Taxes} + \text{Interest Paid} + \text{Interest Received on State and Local Obligations}}{\text{Total Deductions} - \text{Interest Paid}} .$$

Interest received on State and local obligations is added to net income before taxes, since the latter figure includes only income subject to Federal income tax. Table II-2 displays the 1966 through 1974 return on cost (EBIT to cost excluding interest) for the entire service sector.

Income reported for tax purposes varies significantly from the book income reported in the corporate financial statements that is the basis of the FTC data. This variation is caused by different bases or accounting values assigned to property, which affects the size of depreciation; accounting differences in the timing of receipt of income and the expensing of deductions; and the recognition of certain income and deductions for tax purposes only.

²Statistics of Income, Corporation Income Tax Returns, Internal Revenue Service, Washington, D.C., various years.

TABLE II-2. IRS DATA FOR SERVICE SECTOR, 1966-1974

	<u>EBIT to Cost</u> <u>(Excluding Interest)</u>
1966	6.59
1967	6.58
1968	6.52
1969	5.44
1970	4.54
1971	4.72
1972	5.38
1973	5.37
1974	5.23
Average	5.60

In order to put the IRS data in Table II-3 on a comparable basis with the book data of the FTC, the FTC all-manufacturing return on cost (EBIT to cost excluding interest) was compared to the IRS all-manufacturing return on cost for 1966 through 1974. Dividing the FTC return by the IRS return yields a factor for each year, which was then applied to the data in Table II-2. Tables II-3 and II-4 below summarize this procedure. The average profit rate for all service industries remains unchanged from the value in the original report--7.2 percent on cost (excluding interest) expressed on a book accounting basis.

TABLE II-3. FTC VS. IRS RETURN ON COST
FOR MANUFACTURING SECTOR, 1966-1974

<u>Year</u>	<u>FTC</u>	<u>IRS</u>	<u>Factor</u> <u>(FTC ÷ IRS)</u>
1966	11.28	9.39	1.20
1967	9.92	8.43	1.18
1968	10.64	8.60	1.24
1969	10.63	7.75	1.37
1970	9.04	6.55	1.38
1971	9.34	7.05	1.32
1972	9.73	7.56	1.28
1974	10.31	7.78	1.33

TABLE II-4. IRS DATA FOR SERVICE SECTOR
ADJUSTED TO BOOK VALUE BASIS

	EBIT TO COST (Excluding Interest)
1966	7.91
1967	7.76
1968	8.08
1969	7.45
1970	6.27
1971	6.23
1972	6.89
1973	6.93
1974	6.96
Average	7.2

CHOOSE TARGET RATES

We can see value in basing the formulas that the government uses to determine its going-in profit objective on rates greater than the averages realized in the economy at large. Some good reasons for doing so are:

- To ensure the participation of companies and industries with above-average profitability. In LMI's original report, one industry that participates heavily in government acquisition--the instruments industry--had historic profit rates well above the average for all FTC manufacturing industries and in fact well above rates based on a formula that considers important parameters such as asset composition and turnover rate. Likewise, the government's target objectives should be high enough to attract and retain the interest of individual companies that realize profits above the average for all FTC manufacturing.
- To attract more companies to participate in government acquisition. The greater the number of companies attracted, the more likely that competition will be enhanced, and the more likely that the government will acquire quality goods and services at a low price.
- To attract the superior companies, the innovative, high technology, efficient, and capital-intensive ones. If profit opportunities in government acquisition are better than most found in the economy at large, the superior companies are more likely to participate and yield lower prices to the government.
- To recognize the existing differences, for whatever reason, between negotiated (going-in) profit rates and realized (coming-out) profit rates. It is important to know which factors contribute to the differences, how much each contributes, and which ones the government should compensate for. Such factors may be unallowable costs, buy-ins, unforeseen technical difficulties, improper selection of contract type, optimistic cost estimating, and underfunding of the early phases

of new programs. Each of these factors can and should be addressed directly, but until they have been dealt with satisfactorily, the differences should be considered in establishing the government's profit objective going into negotiations.

What is the difference between negotiated and realized profit rates?

Table II-5 shows the differences (excluding unallowable costs) found in a number of studies of Defense contractors. Profit '76 and the GAO study are based upon aggregations of data (by type of contract) from government-oriented profit centers of companies, while the RAND and Beldin studies are based upon contract-by-contract comparisons. DoD '68 is a summation of contracts negotiated between 1964 and 1968 and completed in 1968. The RAND and Beldin figures are an average of unweighted differences, while the DoD '68 figures are averages weighted by contract costs.

LMI examined the most recent Department of Defense data on negotiated and realized profit rates.³ Profit rates realized on contracts concluded in 1976 are reported, as are profit rates negotiated on contracts starting in 1969 to 1973, 1974, 1975 and 1976. Realized and negotiated profit rate data are not presented together by contract in this source. Furthermore the number of contracts on which realized profit data are available is much smaller than that for negotiated rates. The report indicates little difference between realized and negotiated rates for DoD contracts overall and for FPI and CPFF contracts. No data on realized profit rates are available for FFP type contracts. There is a difference for CPIF contracts DoD-wide, although the number of contracts with realized CPIF rates (23) is dwarfed by the number of contracts with negotiated CPIF rates (2814).

³ Profit Rates on Negotiated Prime Contracts, Office of Assistant Secretary of Defense (Comptroller), Fiscal Year 1976.

TABLE II-5. DIFFERENCES BETWEEN REALIZED AND NEGOTIATED
PROFIT RATES FOR DEFENSE CONTRACTORS

<u>Study and Year</u>	<u>Years Covered</u>	<u>Overall</u>	<u>CPFF</u>	<u>CPIF</u>	<u>FPI</u>	<u>FFP</u>
Profit '76	1970-1974	-2.1%				
GAO '71	1966-1969		-0.5%	-0.3%	-3.9%	-3.1%
RAND '69	1964-1967	-1.4%				
		-1.9%				
BELDIN '69	1963-1968	-0.1%	+0.3%	-0.6%		
DOD '68	1963-1968	0	+0.5%	-1.0%		

SOURCES:

Profit '76 Summary Report, Profit Study Group, Office DASD (Procurement), Office of Assistant Secretary of Defense (Installations and Logistics), December 1976, p. II-21.

Defense Industry Profit Study, by the Comptroller General of the U.S., B-159896, March 17, 1971, p. 25.

The Impact of the Weighted Guidelines Profit System on Defense Contract Fees, by G. R. Hall, RAND Corp., Santa Monica, California, Memorandum RM-6183-PR, December 1969, p. 35.

Defense Procurement Outcomes in the Incentive Contract Environment, by David L. Beldin, Ph.D. Dissertation, Stanford University, May 1969, p. 99.

Profit Rates Negotiated on Selected Prime Contracts--Fiscal Year 1968, Directorate of Statistical Services, U.S. Department of Defense, December 10, 1968, p. 12.

While differences may exist between going-in and coming-out rates, as evidenced by the above discussion, it is difficult to express the difference in a single figure.

Unallowable costs have been estimated for Defense contractors as about 2.0 percent of sales in Profit '76,⁴ about 1.4 percent of sales in the GAO report,⁵ and about 1.5 percent of sales on a basis of averages, dollar-weighted by sales, and 1.9 percent of sales on a basis of unweighted averages in an earlier LMI report.⁶ An important element of these costs is interest, which is provided for in profit by basing target rates on economy-wide figures for EBIT. While interest as a percentage of sales is about 1.6 percent and 2.5 percent for the manufacturing and service sectors respectively, based upon five years of IRS data (1970 to 1974) and about 1.6 percent for the manufacturing sector based upon five years of FTC data (1974 to 1978), LMI found in 1967 that interest costs were about 0.5 percent of sales for a sample of Defense contractors.⁷ Independent research and development (IR&D) accounted for about 0.75 percent of sales, and all other unallowable costs accounted for about 0.7 percent of sales in that sample.

The question is "How much should the target rate be?" While the answer is primarily a matter of a policy-maker's judgment, some objective indicators can be found in the dispersion of FTC industry profit data (1962-1976):

- The top 25 percent of manufacturing industry profits is about 18 percent above the median industry profit and about 25 percent above the average.

⁴Profit '76 Summary Report, op. cit., p. II-20.

⁵Defense Industry Profit Study, op. cit., p. 25.

⁶Defense Industry Profit Review, Volume One, Logistics Management Institute, Washington, D.C., November 1967, p. 39.

⁷Ibid., p. 40.

- The top 10 percent of manufacturing industry profits is about 43 percent above the median and 52 percent above the average.

A figure of one-third greater than the average would yield a target rate on which to develop going-in profit formulas, at a level:

- that the top 20 percent of manufacturing industries realize;
- that results in a formula which, after considering adjustments, would give profits on manufacturing contracts approximately the same as Defense contractors negotiate today;
- that recognizes the differences between negotiated and realized profit rates.

If the size of the difference between negotiated and realized rates were known more accurately for a variety of government contracts, if the relative size of factors explaining the differences were known, and if the government determined which factors it should compensate contractors for, the process of choosing a target rate on which to base profit formulas could be more precise. For example, negotiated and realized profit rates differ to some extent due to underfunding of new programs in the concept formulation, demonstration and validation phases. Mr. James F. Drake, Corporate Director, Advanced Program Plans, Hughes Aircraft Company, estimated the magnitude of the problem in the Department of Defense as 500 to 800 million dollars per year based on a survey of nine firms.⁸ Some of the underfunding is coming out of profits and helps explain differences between going-in and coming-out profit rates.

A figure one-third greater than the average would yield a target rate (of earnings before interest and taxes) on which to develop going-in profit formulas of:

- 29.9 percent on capital for manufacturing and construction contracts
- 9.6 percent on cost for service industry contracts.

⁸"Gross Underfunding of DoD A-109 Concept Formulation, Demonstration and Validation Phases and Its Consequences," by James F. Drake, presented at 8th Annual DoD Acquisition Research Symposium, Newport, Rhode Island, May 5, 1979.

EXTEND RANGE FOR CONTRACT TYPE RISK ADJUSTMENT

There is some evidence of a greater difference between negotiated and realized profit rates for fixed price contracts than for cost reimbursement contracts. The findings of the GAO study shown in Table II-5 reflect this difference. One way to recognize this difference is to extend the range of the adjustment for contract type risk between cost-plus-fixed fee (CPFF) and firm-fixed-price (FFP) contracts.

We continue to treat the adjustments for contract type risk and complexity separately, recognizing that there can be complexity differences within each contract type. The proposed adjustment for the risk of not recouping all costs associated with different types of contracts is as follows:

- 2% on Cost if Cost-Plus-Fixed Fee,
- 1% to +1% on Cost if Cost-Plus-Incentive Fee,
- +1% to +3% on Cost if Fixed-Price-Incentive,
- +3% on Cost if Firm-Fixed-Price.

The range on incentive type contracts would allow negotiating flexibility, since sharing rates and ceilings are negotiated on these contracts.

EXTEND RANGE FOR COMPLEXITY ADJUSTMENT

The complexity adjustment reflects a reward for the additional entrepreneurial skill required to organize and manage complex tasks. The adjustment can also be the basis for recognizing differences between high- and low-profit industries that could not be reflected in single target rates for manufacturing and construction industries and service industries. Ideally, there could be different target rates for different industries, but objective, comprehensive, industry-specific data to justify and support such rates do not exist. Application of the adjustment becomes a matter of negotiation.

The proposed adjustment for complexity is 0% to 3% on Cost.

III. PROFIT FORMULAS

HYBRID PROFIT FORMULA

The hybrid profit formula based on both cost and capital for manufacturing and construction contracts is derived as in the original report.¹ The five variables used to develop the formula are shown in Table III-1.

TABLE III-1. DESIGN OF HYBRID PROFIT FORMULA

<u>Variable</u>	<u>Recommended Value and Source</u>
1. Weight on Capital Provided vs. Weight on Cost of Performance	1. Greater Weight on Capital (65%, LMI)
2. Target Rate of Return on Total Capital Provided	2. Single Rate for All Manufacturing Industries (29.9%, FTC)
3. Minimum Borrowing Rate	3. Lowest Treasury Interest Rate (e.g., 9.0%)
4. Ratio of Facilities Capital to Total Capital Provided (Asset Composition)	4. Single Rate for All Manufacturing Industries (0.60, FTC)
5. Ratio of Cost of Performance to Total Capital Provided (Turnover Rate)	5. Single Rate for All Manufacturing Industries (2.29, FTC)

We recommend that capital be weighted more heavily than cost because the hybrid formula is to be applied to manufacturing and construction industries, where the use of facilities capital can reduce the overall cost of goods acquired by the government. The 65 percent weight indicates that our preference for the characteristics of the capital component is roughly twice as great as for the cost component. The 65 percent weight on capital is before adjustments. After adjustments for contract-type risk and complexity, the range in weight on capital can vary between about 44 and 77 percent for an average FTC manufacturing firm.

¹ A Uniform Profit Policy for Government Acquisition, op. cit., Ch. IV.

The target rate (of earnings before interest and taxes) is 29.9 percent on total capital provided. It is based on the updated average return on capital of 22.4 percent from the FTC data for all manufacturing, increased by one-third to yield the target rate as described in Chapter II.

The profit rate on operating capital is established at a minimum borrowing rate equivalent to the lowest Treasury rate of interest (about 9.0 percent in mid-1979) to partially reward operating capital, but not to encourage excessive use of it. Such a rate varies with market conditions and would be set at least once a year.

A higher profit rate on facilities capital is therefore necessary (to yield the target rate of return on total capital), and desirable (to encourage the use of facilities capital, which leads to lower overall acquisition costs to the government). To find this rate, it is necessary to know the mix of operating and facilities capital, asset composition (the fourth variable in Table III-1), defined as the ratio of facilities capital to total capital provided. The average asset composition for all manufacturing industries is .60, i.e., facilities capital represents 60 percent of total capital, and operating capital represents 40 percent.

The profit rate on facilities capital is found using the weight on the capital component of 65 percent, the overall target rate of return on capital of 29.9 percent, the asset composition of .60, and the minimum borrowing rate of 9.0 percent on operating capital. The capital component accounts for 65 percent of the overall target rate of 29.9 percent, or 19.4 percent return on capital. If operating capital, which is 40 percent of total capital, bears a profit rate of 9.0 percent, facilities capital, which is 60 percent of total

capital, must bear a profit rate of 26.3 percent to yield 19.4 percent return on capital:

$$.40 \times \text{TCP} \times 9.0\% + .60 \times \text{TCP} \times Y\% = 19.4 \times \text{TCP},$$

where TCP = Total Capital Provided,

Y = Derived Profit Rate on Facilities Capital.

Solving for Y, Y = 26.3%.

Incorporating a change in the Treasury borrowing rate into the formula would necessitate resetting the profit rate on facilities capital. This is because the profit rate on facilities capital is derived, in part, from the profit rate on operating capital (as well as from the overall target rate, the weight given the total capital component, and the asset composition).

Finally, to get the profit rate for the cost component of the hybrid formula, we use the turnover rate (the last variable shown in Table III-1) defined as the ratio of the cost of performing a contract to the total capital provided on a contract. The average turnover rate for all FTC manufacturing industries is 2.29, as described in Chapter II.

The profit rate on the cost component is found by means of the weight on the cost component of 35 percent, the overall target rate of return on capital of 29.9 percent, and the turnover rate for the average of all manufacturing industries of 2.29. The cost component accounts for 35 percent of the overall target rate of 29.9 percent, or 10.5 percent return on capital. The 10.5 percent rate of return on capital is converted to 4.6 percent rate of return on cost by dividing by the turnover rate.

The hybrid profit formula can be summarized as follows:

$$\begin{aligned} & 9.0\% \text{ on Operating Capital} + 26.3\% \text{ on Facilities Capital} \\ & \quad + 4.6\% \text{ on Estimated Contract Cost} \\ & + \left\{ \begin{array}{ll} -2\% & \text{on Cost if Cost-Plus-Fixed Fee} \\ -1\% \text{ to } +1\% & \text{on Cost if Cost-Plus-Incentive Fee} \\ +1\% \text{ to } +3\% & \text{on Cost if Fixed-Price-Incentive} \\ +3\% & \text{on Cost if Firm-Fixed-Price} \end{array} \right. \\ & + 0\% \text{ to } 3\% \text{ on Cost for Complexity.} \end{aligned}$$

Profit ranges resulting from application of the hybrid formula are shown in Table III-2. The columns show profit ranges in terms of percent on total capital provided and percent on cost for the average of all FTC manufacturing firms and for different ratios of cost/capital for government contractors. In computing the amount of contractor capital, facilities capital is determined by the CAS 414 procedure and operating capital is based upon simple approximations derived from Air Force Contract Financing Model results.

For the average of all FTC manufacturing industries, the profit range on capital is 25.3 percent to 43.6 percent, the range on cost is 11.0 percent to 19.0 percent, and the percent of profit based on capital is 65 percent before adjustments and 44.4 percent to 76.6 percent after adjustments. That is, for a cost-plus-fixed fee contract with no adjustment for complexity, the going in profit objective would be 25.3 percent on capital or 11.0 percent on cost with 76.6 percent of profit based on capital; for a firm-fixed-price contract with the maximum adjustment for complexity, the objective would be 43.6 percent on capital or 19.0 percent on cost with 44.4 percent of profit based on capital.

TABLE III-2. PROFIT RANGE FOR HYBRID FORMULA

(Target Rate 1/3 Greater Than Average; Weight on Capital 65 Percent)

PROFIT = 9% x Operating Capital + 26.3% x Facilities Capital + 4.6% x Cost

$$+ \left\{ \begin{array}{l} -2\% \text{ x Cost if CPFF} \\ -1\% \text{ to } +1\% \text{ if CPIF} \\ +1\% \text{ to } +3\% \text{ if FPI} \\ +3\% \quad \quad \text{if FFP} \end{array} \right. + 0\% \text{ to } 3\% \text{ x Cost for Complexity.}$$

	<u>Cost/Capital</u> <u>(Turnover Rate)</u>	<u>Profit Range</u>		<u>% Weight</u> <u>On Capital</u>
		<u>% on Capital</u>	<u>% on Cost</u>	
Average of All FTC Manufacturing	2.29	25.3 - 43.6%	11.0 - 19.0%	44.4 - 76.6%
Government Contractor	1	28.9 - 36.2%	28.9 - 36.2%	70.7 - 91.0%
	2	31.5 - 46.1	15.8 - 23.1	54.0 - 83.5
	3	34.1 - 56.0	11.4 - 18.7	43.2 - 77.1
	4	36.7 - 66.0	9.2 - 16.5	35.8 - 71.7
	5	39.3 - 75.9	7.9 - 15.2	30.2 - 66.9
	6	41.9 - 85.8	7.0 - 14.3	25.9 - 62.8
	7	44.5 - 95.7	6.4 - 13.7	22.5 - 59.1
	8	47.1 - 105.7	5.9 - 13.2	19.8 - 55.8
	9	49.7 - 115.6	5.5 - 12.8	17.5 - 52.9
	10	52.3 - 125.5	5.2 - 12.5	15.5 - 50.3
	∞	∞	2.6 - 10.6	0 0

For the government contractor, Table III-2 indicates that very capital-intensive firms (cost to capital ratio of 1) would get the most profit relative to contract size--a high rate on cost and an equivalent rate on capital--with most of the profit based on capital. At high turnover rates--little contractor-provided capital on a contract--profits are lower relative to contract size, and less of the profit is based upon capital. Profits increase as a contractor uses more of his own capital. If a contractor doubled the amount of capital on a contract, for example from 12.5 cents at a turnover rate of 8 to 25 cents at a turnover rate of 4, the profit rate on cost would increase by 3.3 percentage points.

Although there are no ranges on the profit rate on operating capital, facilities capital, and contract cost, Table III-2 reflects the very wide profit range that results, based upon a meaningful factor such as the ratio of contractor-provided capital to contract cost. Such a ratio varies from a GOCO-type operation where a contractor provides no capital (turnover rate of ∞) to a very capital intensive contractor who provides one dollar of capital for every dollar of contract cost.

The hybrid formula can be used for determining the going-in profit objective for contracts where the contractor provides no capital. The profit range for GOCO-type operations where contractors are working with government-owned plant and equipment is 2.6 to 10.6 percent on cost.

Measuring Operating Capital

The results of analyzing runs of the Air Force Contract Financing Model (FINMOD) can be summarized as:

- no contractor-provided operating capital on cost-reimbursement type contracts;
- operating capital equal to 4.1 percent of total contract cost for fixed-price contracts with progress payments;

- operating capital equal to 19 percent of total contract cost for contracts without progress payments.

These results can be expressed in the following simple approximations of the return on operating capital for use in the hybrid profit formula, based upon a 9.0 percent annual profit rate:

If the contract is a cost-reimbursement type, no operating capital is recognized.

If the contract is a fixed-price type with progress payments, operating capital can be recognized and rewarded by giving the contractor 0.4 percent on the cost of the contract for a one year contract. This rate would vary directly with the length of contract, i.e.,

$$.4\% \times \frac{\text{length of contract in months}}{12 \text{ months}} .$$

If there are no progress payments, contractor-provided operating capital can be recognized and rewarded by giving the contractor 1.7 percent on costs for a year contract. This rate varies directly with the length of contract.

As we stated in our original report:

While the above approximation is simple and easy to apply, a refinement could be made to increase the precision of measuring contractor-provided operating capital on a contract. FINMOD could be run for a much larger sample of contracts in an attempt to develop more precise measures--in effect to develop a simple table that would identify the dollars of contractor-provided operating capital per dollars of contract cost, based upon a few of the most significant characteristics of the contracts.²

In fact, such an effort should be made if operating capital is included in a profit formula.

Allocating Facilities Capital

If the present practice of recognizing the imputed cost of facilities capital under CAS 414 were continued, it could easily be incorporated

²Ibid., p. V-7.

into the hybrid profit formula by reducing the 26.3 percent profit rate on facilities capital by the Treasury borrowing rate used to find the imputed cost of facilities capital under CAS 414. Assuming a Treasury borrowing rate of 9 percent under CAS 414, the hybrid profit formula would become:

$$\begin{aligned} &9.0\% \text{ on Operating Capital} + 17.3\% \text{ on Facilities Capital} \\ &\quad + 4.6\% \text{ on Cost} + \text{Adjustments.} \end{aligned}$$

COST-BASED PROFIT FORMULA

The cost-based formula for the service sector has one major element--return on costs--and the same two adjustments as the hybrid formula. The basic target rate is 9.6 percent on cost, based upon the updated average rate of EBIT to cost (excluding interest) of 7.2 percent using IRS data for all service industries, increased by one-third to yield the target rate, as described in Chapter II. Where no equivalent rate exists from the economy at large, such as for GOCO activities, the recommended basic rate is 4.2 percent to make it consistent with the profit range found using the hybrid formula.

The cost-based profit formula can be summarized as follows:

9.6% on Estimated Contract Cost	
+	<div style="display: flex; align-items: center;"> <div style="font-size: 3em; margin-right: 10px;">{</div> <div> <div style="margin-bottom: 5px;">-2% on Cost if Cost-Plus-Fixed Fee</div> <div style="margin-bottom: 5px;">-1% to +1% on Cost if Cost-Plus-Incentive Fee</div> <div style="margin-bottom: 5px;">+1% to +3% on Cost if Fixed-Price-Incentive</div> <div style="margin-bottom: 5px;">+3% on Cost if Firm-Fixed-Price</div> </div> </div>
+ 0% to 3% on Cost for Complexity.	

Applying the cost-based formula to service industry contracts and GOCO activities yields the range of profits by contract type shown in Table III-3. For example, the formula would yield a going-in profit objective for a CPFF

contract of from 7.6 percent to 10.6 percent on costs for a service industry contract, depending on complexity and industry profitability, and 2.2 percent to 5.2 percent on costs for a GOCO activity.

TABLE III-3. PROFIT RANGE FOR SERVICE CONTRACT FORMULA

(Target Rate 1/3 Greater Than Average)

$$\text{PROFIT} = 9.6\% \times \text{Cost} + \left\{ \begin{array}{ll} -2\% \times \text{Cost} & \text{if CPFF} \\ -1\% \text{ to } +1\% & \text{if CPIF} \\ +1\% \text{ to } +3\% & \text{if FPI} \\ +3\% & \text{if FFP} \end{array} \right. + 0 \text{ to } 3\% \times \text{Cost} \text{ For Complexity.}$$

<u>Type Contract</u>	<u>% on Cost</u>	
	<u>Service Contract</u>	<u>GOCO Activity</u>
CPFF	7.6 - 10.6%	2.2 - 5.2%
CPIF	8.6 - 13.6%	3.2 - 8.2%
FPI	10.6 - 15.6%	5.2 - 10.2%
FFP	12.6 - 15.6%	7.2 - 10.2%

Service industry firms should have the option of having the hybrid formula applied to their contracts. Those service industries with significant facilities capital, e.g., data processing, may opt for the hybrid profit formula over the cost-based formula so that their facilities capital is explicitly recognized and rewarded.

ALTERNATE PROFIT FORMULAS

Lower Weight on Capital

An alternate profit formula can be developed with less profit contributed by the capital component (a lower weight on capital). Table III-4 shows the profit ranges that result from developing a formula based upon the same target rate of 29.9 percent on capital, the same minimum Treasury borrowing rate on operating capital, and the same adjustments, but different weights on capital of either 65 percent or 25 percent respectively. (Table III-2 is repeated on page III-10 for ease of comparison with Table III-4.)

TABLE III-2. PROFIT RANGE FOR HYBRID FORMULA

(Target Rate 1/3 Greater Than Average; Weight on Capital 65 Percent)

$$\text{PROFIT} = 9\% \times \text{Operating Capital} + 26.3\% \times \text{Facilities Capital} + 4.6\% \times \text{Cost}$$

$$+ \left\{ \begin{array}{l} -2\% \times \text{Cost if CPFF} \\ -1\% \text{ to } +1\% \text{ if CPIF} \\ +1\% \text{ to } +3\% \text{ if FPI} \\ +3\% \quad \quad \text{if FFP} \end{array} \right. + 0\% \text{ to } 3\% \times \text{Cost for Complexity.}$$

	<u>Cost/Capital</u> <u>(Turnover Rate)</u>	<u>Profit Range</u>		<u>% Weight</u> <u>On Capital</u>
		<u>% on Capital</u>	<u>% on Cost</u>	
Average of All FTC Manufacturing	2.29	25.3 - 43.6%	11.0 - 19.0%	44.4 - 76.6%
Government Contractor	1	28.9 - 36.2%	28.9 - 36.2%	70.7 - 91.0%
	2	31.5 - 46.1	15.8 - 23.1	54.0 - 83.5
	3	34.1 - 56.0	11.4 - 18.7	43.2 - 77.1
	4	36.7 - 66.0	9.2 - 16.5	35.8 - 71.7
	5	39.3 - 75.9	7.9 - 15.2	30.2 - 66.9
	6	41.9 - 85.8	7.0 - 14.3	25.9 - 62.8
	7	44.5 - 95.7	6.4 - 13.7	22.5 - 59.1
	8	47.1 - 105.7	5.9 - 13.2	19.8 - 55.8
	9	49.7 - 115.6	5.5 - 12.8	17.5 - 52.9
	10	52.3 - 125.5	5.2 - 12.5	15.5 - 50.3
	∞	∞	2.6 - 10.6	0 0

TABLE III-4. PROFIT RANGE FOR HYBRID FORMULA (LOWER WEIGHT ON CAPITAL)
 (Target Rate 1/3 Greater Than Average; Weight on Capital 25 Percent)

PROFIT = 9.0% x Operating Capital + 6.5% x Facilities Capital + 9.8% x Cost

$$+ \left\{ \begin{array}{l} -2\% \text{ x Cost if CPFF} \\ -1\% \text{ to } +1\% \text{ if CPIF} \\ +1\% \text{ to } +3\% \text{ if FPI} \\ +3\% \text{ if FFP} \end{array} \right. + 0\% \text{ to } 3\% \text{ x Cost for Complexity.}$$

	<u>Cost/Capital</u> <u>(Turnover Rate)</u>	<u>Profit Range</u>		<u>% Weight</u> <u>On Capital</u>
		<u>% on Capital</u>	<u>% on Cost</u>	
Average of All FTC Manufacturing	2.29	25.3 - 43.6%	11.0 - 19.0%	17.2 - 29.6%
Government Contractor	1	14.3 - 22.4%	14.3 - 22.4%	29.5 - 45.5%
	2	22.1 - 38.4	11.1 - 19.2	17.7 - 29.4
	3	29.9 - 54.3	10.0 - 18.1	12.7 - 21.7
	4	37.7 - 70.2	9.4 - 17.6	10.0 - 17.2
	5	45.5 - 86.2	9.1 - 17.2	8.4 - 14.3
	6	53.3 - 102.1	8.9 - 17.0	7.1 - 12.2
	7	61.1 - 118.0	8.7 - 16.9	6.3 - 10.6
	8	68.9 - 134.0	8.6 - 16.8	5.7 - 9.4
	9	76.7 - 149.9	8.5 - 16.7	5.1 - 8.5
	10	84.5 - 165.8	8.5 - 16.6	4.7 - 7.7
	∞	∞	7.8 - 15.8	0 0

Both formulas yield equivalent results for the average of all FTC manufacturers. The formula based upon the 25 percent weight on capital, however, produces lower profits for capital-intensive firms (those with a low turnover rate or low ratio of cost/capital), and higher profits for firms using little of their own capital (those with high ratios of cost/capital) than the formula based upon 65 percent weight on capital.

If a contractor were to double the capital provided on a contract from 12.5 cents per dollar of cost (turnover rate of 8) to 25 cents (turnover rate of 4), he would receive 0.8 percentage points more profit on cost under the formula based upon 25 percent weight on capital. Under the formula based upon 65 percent weight on capital, he would receive 3.3 percentage points more profit--clearly more of an incentive to contractor investment.

Positive Adjustments

A second alternate hybrid formula can be developed based upon a target rate equal to the average for all FTC manufacturers--22.4 percent on capital, a weight on capital of 65 percent, a profit rate on operating capital equal to the minimum Treasury borrowing rate, but with positive adjustments for contract-type risk. The rationale for positive adjustments is the same as that for basing a formula on an above-average target rate. The second alternate hybrid formula would yield profit rates roughly equivalent to those of the proposed hybrid formula for typical government contractors.

This alternate formula (with positive adjustments) produces lower rates for the most capital-intensive contractors (those with low cost to capital ratios) but higher profits for the least capital-intensive contractors, compared to the proposed formula. The profit formulas, range of

profits, and percent of profit contributed by the capital component are shown in Table III-5. (Table III-2 is repeated on page III-14 for ease of comparison.)

The alternate formula, based upon positive adjustments, is more of a disincentive to investment than the proposed formula. If a contractor were to double his capital provided on a contract from 12.5 cents per dollar of cost (turnover rate of 8) to 25 cents (turnover rate of 4), he would receive an additional 2.3 percentage points of profit under the formula based upon positive adjustments. Under the proposed formula, he would receive an additional 3.3 percentage points.

We prefer the proposed formula because it is less of a disincentive to investment. The proposed formula has a higher weight on capital, since the adjustments add less to the cost component than they do with the alternate formula. The proposed formula has a higher rate on facilities capital, since, in developing the formula, the nominal weight on capital of 65 percent was applied to a higher target rate 29.9 percent on capital, than the alternate formula, 22.4 percent on capital.

An alternate cost-based formula can be developed using the same approach: a target rate equal to the average for all service industries based upon IRS data--7.2 percent on cost, with positive adjustments. The cost-based formula and ranges for service industry contracts are shown in Table III-6.

TABLE III-2. PROFIT RANGE FOR HYBRID FORMULA

(Target Rate 1/3 Greater Than Average; Weight on Capital 65 Percent)

$$\text{PROFIT} = 9\% \times \text{Operating Capital} + 26.3\% \times \text{Facilities Capital} + 4.6\% \times \text{Cost}$$

$$+ \left\{ \begin{array}{l} -2\% \times \text{Cost if CPFF} \\ -1\% \text{ to } +1\% \text{ if CPIF} \\ +1\% \text{ to } +3\% \text{ if FPI} \\ +3\% \quad \quad \text{if FFP} \end{array} \right. + 0\% \text{ to } 3\% \times \text{Cost for Complexity.}$$

	<u>Cost/Capital</u> <u>(Turnover Rate)</u>	<u>Profit Range</u>		<u>% Weight</u> <u>On Capital</u>
		<u>% on Capital</u>	<u>% on Cost</u>	
Average of All FTC Manufacturing	2.29	25.3 - 43.6%	11.0 - 19.0%	44.4 - 76.6%
Government Contractor	1	28.9 - 36.2%	28.9 - 36.2%	70.7 - 91.0%
	2	31.5 - 46.1	15.8 - 23.1	54.0 - 83.5
	3	34.1 - 56.0	11.4 - 18.7	43.2 - 77.1
	4	36.7 - 66.0	9.2 - 16.5	35.8 - 71.7
	5	39.3 - 75.9	7.9 - 15.2	30.2 - 66.9
	6	41.9 - 85.8	7.0 - 14.3	25.9 - 62.8
	7	44.5 - 95.7	6.4 - 13.7	22.5 - 59.1
	8	47.1 - 105.7	5.9 - 13.2	19.8 - 55.8
	9	49.7 - 115.6	5.5 - 12.8	17.5 - 52.9
	10	52.3 - 125.5	5.2 - 12.5	15.5 - 50.5
	∞	∞	2.6 - 10.6	0 0

TABLE III-5. PROFIT RANGE FOR HYBRID FORMULA (POSITIVE ADJUSTMENTS)

(Target Rate Equal to Average; Weight on Capital 65%)

PROFIT = 9.0% x Operating Capital + 18.3% x Facilities Capital + 3.4% x Cost

$$+ \left\{ \begin{array}{l} 0\% \times \text{Cost if CPFF} \\ 1\% \text{ to } 3\% \text{ if CPIF} \\ 3\% \text{ to } 5\% \text{ if FPI} \\ 5\% \quad \quad \text{if FFP} \end{array} \right. + 0\% \text{ to } 3\% \times \text{Cost for Complexity.}$$

	<u>Cost/Capital</u> <u>(Turnover Rate)</u>	<u>Profit Range</u>		<u>% Weight</u> <u>On Capital</u>
		<u>% on Capital</u>	<u>% on Cost</u>	
Average of All FTC Manufacturing	2.29	22.4 - 40.7%	9.8 - 17.8%	35.9 - 65.2%
Government Contractor	1	21.7 - 29.3%	21.7 - 29.3%	61.1 - 84.3%
	2	25.1 - 40.4	12.6 - 20.2	43.6 - 72.9
	3	28.5 - 51.4	9.5 - 17.1	33.5 - 64.2
	4	31.9 - 62.5	8.0 - 15.6	27.0 - 57.4
	5	35.3 - 73.5	7.1 - 14.7	22.4 - 51.8
	6	38.7 - 84.6	6.5 - 14.1	19.1 - 47.3
	7	42.1 - 95.6	6.0 - 13.7	16.5 - 43.5
	8	45.5 - 106.7	5.7 - 13.3	14.5 - 40.2
	9	48.9 - 117.7	5.4 - 13.1	12.8 - 37.4
	10	52.3 - 128.8	5.2 - 12.9	11.5 - 35.0
	∞	∞	3.4 - 11.4	0 0

TABLE III-6. PROFIT RANGE FOR SERVICE CONTRACT FORMULA (POSITIVE ADJUSTMENTS)
(Target Rate Equal to Average)

$$\text{PROFIT} = 7.2\% \times \text{Cost} + \begin{cases} 0\% \times \text{Cost} & \text{if CPFF} \\ 1\% \text{ to } 3\% & \text{if CPIF} \\ 3\% \text{ to } 5\% & \text{if FPI} \\ 5\% & \text{if FFP} \end{cases} + \begin{cases} 0 \text{ to } 3\% \times \text{Cost} & \text{for Complexity} \end{cases}$$

<u>TYPE CONTRACT</u>	<u>% ON COST</u>
CPFF	7.2 - 10.2%
CPIF	8.2 - 13.2%
FPI	10.2 - 15.2%
FFP	12.2 - 15.2%